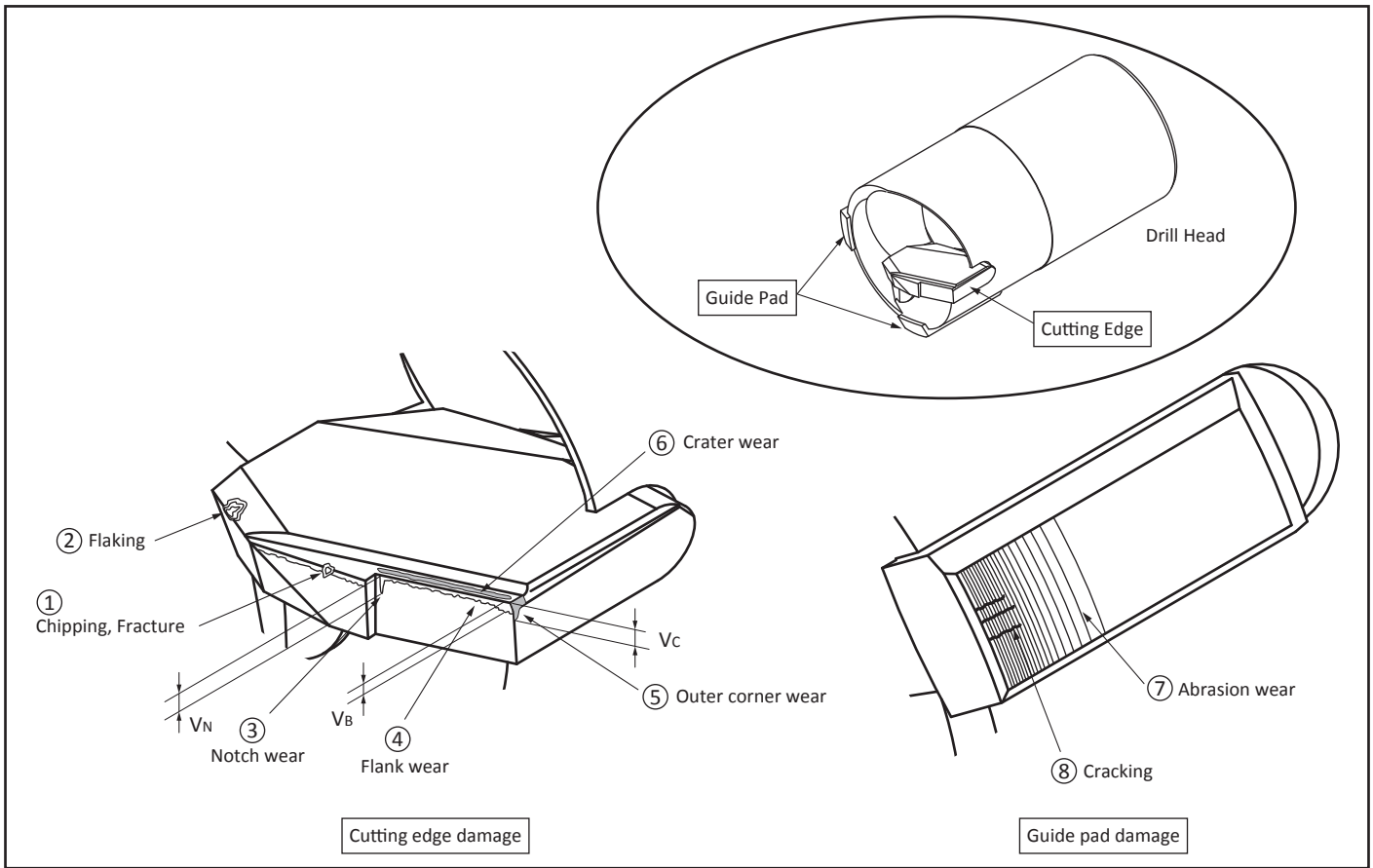


# Drill Head Damage

## Drill Head Damage

There are several types of damage to a drill head as below.



## Damage and Impact

The impact caused by drill head damage is as below.

Type of damage	Impact
① Chipping, Fracture ② Flaking ⑦ Abrasion wear	<ul style="list-style-type: none"> <li>• Variation in hole diameter</li> <li>• Insufficient chipbreaking</li> <li>• Deterioration of surface finish</li> </ul>
⑥ Crater wear	<ul style="list-style-type: none"> <li>• Insufficient chipbreaking</li> </ul>
④ Flank wear ⑤ Outer corner wear ③ Notch wear ⑧ Cracking	<ul style="list-style-type: none"> <li>• Increased cutting resistance</li> <li>• Tool vibration</li> <li>• Change in cutting noise</li> <li>• Deterioration of surface finish</li> </ul>

## Tool Life Judgment Conditions

When drill head damage occurs, chipbreaking becomes insufficient and cutting noise and cutting resistance can increase. If a heavily damaged tool keeps running, tool breakage will occur. It is important to replace drill, insert or change insert corner as soon as required.

- Cutting edge chips or fractures
- 0.3mm or more notch wear ( $V_N$ ), flank wear ( $V_B$ ) or outer corner wear ( $V_C$ ) occurs
- Cutting noise or tool vibration noise increases
- Chipbreaking becomes inadequate
- Required cutting power increases by around 30% compared to initial state



By correctly evaluating the drill head condition and cause of any damage, stable deep hole drilling can be achieved.